



Rehabilitation
Engineering &
Applied
Research



Survey of users of wheelchair seat elevators

The Rehabilitation Engineering and Applied Research Center in collaboration with Quantum Rehab surveyed wheelchair users whose powered wheelchairs are equipped with a seat elevator function. The objective of the survey was to document about how people use wheelchair seat elevating features. The survey was deployed in June 2016.

The survey was reviewed and approved by Georgia Tech's Institutional Review Board.

This report describes the methods and reports the results of the survey.

Survey Dissemination.

Invitations were disseminated using a variety of social media and mailing list platforms as listed below. A reminder was distributed about 7 days after the initial solicitation to the same outlets. The method used to disseminate the survey does not permit assessment of response rate since many recipients of the solicitation were not users of a wheelchair with a seat elevator.

- Quantum Rehab Facebook Page and Twitter
- Quantum Owner's Club
- Quantum Rehab eBlast to therapists and providers
- NRRTS eBlast
- Wheelchairjunkie.com
- United Spinal's Facebook page
- Shepherd Peer's Facebook page
- CATEA's Facebook page
- RESNA – Wheeled Mobility SIG listserve
- Life after spinal cord injury Facebook page

Survey invitation verbiage

The REARLab at Georgia Tech is administering a survey to learn about how people use wheelchair seat elevators. If you are a wheelchair user with a seat elevator, please consider participating in this 5-minute survey.

Click the link below for additional information and to begin the survey

<link provided>

Survey Response Statistics

	Count	Percent
Complete	99	63.5
Partial	57	36.5
Total	156	

Summary of results:

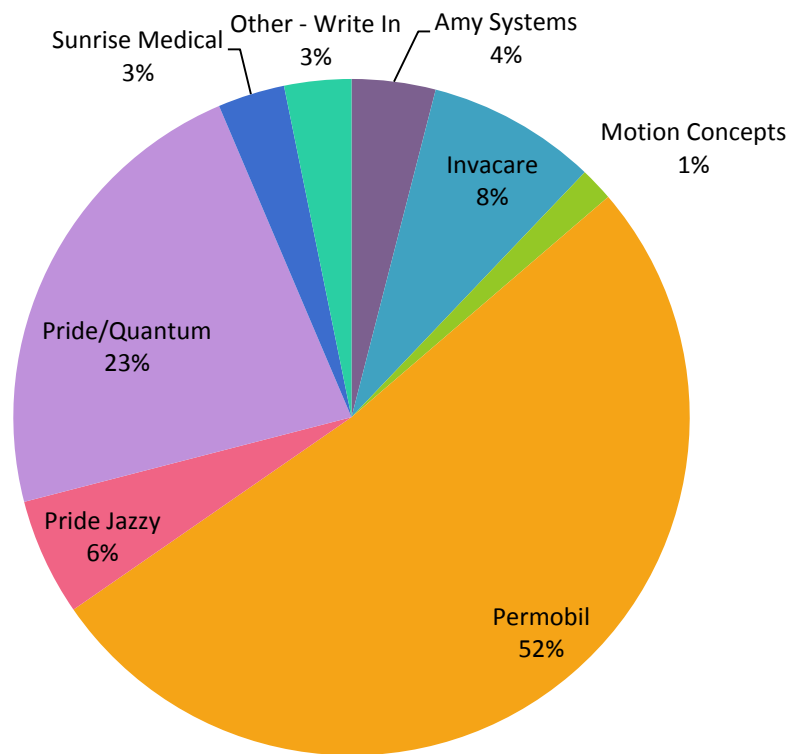
Respondents were equal across gender and were overwhelmingly white (>90%). Over half were older than 45 years of age and three quarters held college degrees. They were typically experienced wheelchair users with 78% having used a seat elevator for over a year. About 40% held a paid employment and about 20% lived alone. While 65% reported using only the powered wheelchair with the elevating feature, 20% reported also using a manual wheelchair and 15% another powered wheelchair. About 10% reported using an ambulation aid for mobility.

One half reported using the seat elevating feature more than once per hour. Using Chi-square analysis, no differences in frequency of elevator use existed across gender, age or when categorizing subjects as “working/student” and “not working”.

Over 90% reported using seat elevation frequently or sometimes while at home or in the community. When asked to report on the activities for which elevation was used, the majority of subjects identified reaching (95%), improving line of sight (85%), while eating or preparing a meal (84%) and transferring (80%) as utilizing elevation ‘often’ or ‘sometimes’. Lesser common activities, for which persons reported ‘rarely’ or ‘never’ using seat elevation included bathing activities (68%), dressing (58%) and toileting activities (55%).

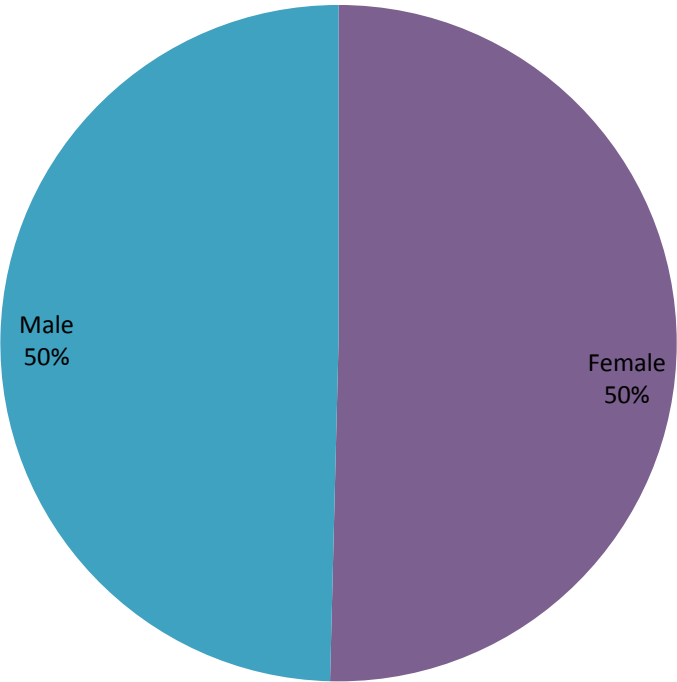
About ½ of respondents report often driving with some amount of seat elevation while 25% report rarely or never doing so. A little less than one-half of respondents report elevating the seat to its highest point more than half the time and 20% report rising to its highest position less than half the time, with the remaining 1/3 estimating that they equally use maximum and lower heights .

Who is the manufacturer of your seat elevator?



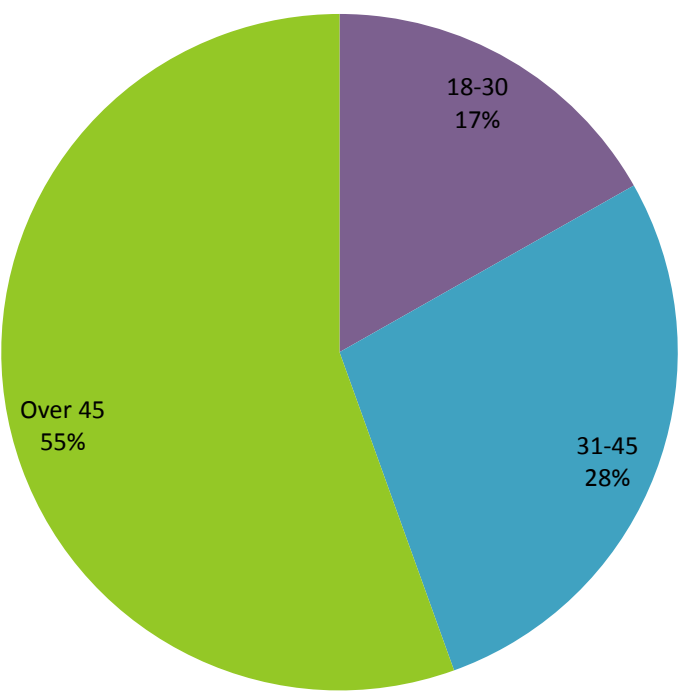
Value	Percent	Count
Amy Systems	4.0%	5
Invacare	8.1%	10
Motion Concepts	1.6%	2
Permobil	51.6%	64
Pride Jazzy	5.6%	7
Pride/Quantum	22.6%	28
Sunrise Medical	3.2%	4
Other - Write In	3.2%	4
	Total	124

What is your gender?



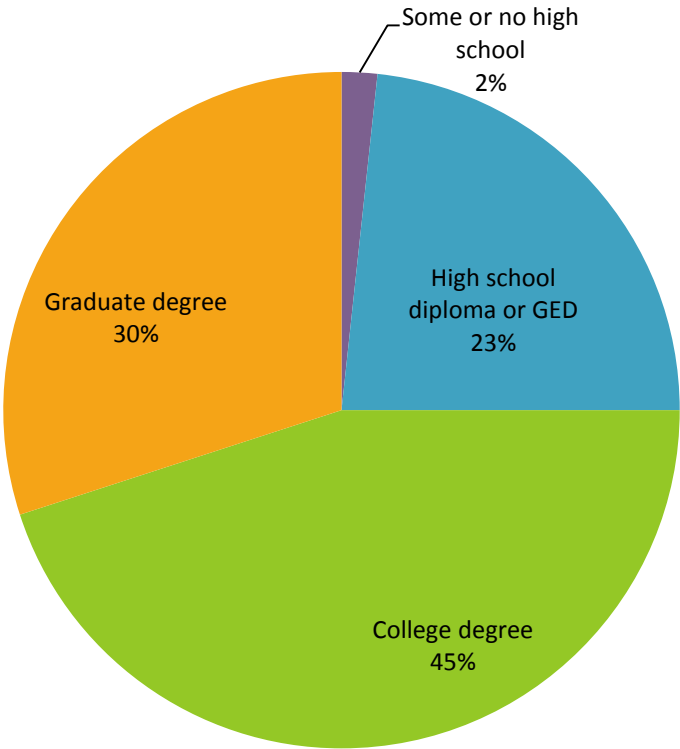
Value	Percent	Count
Female	50.4%	61
Male	49.6%	60
	Total	121

What is your age?



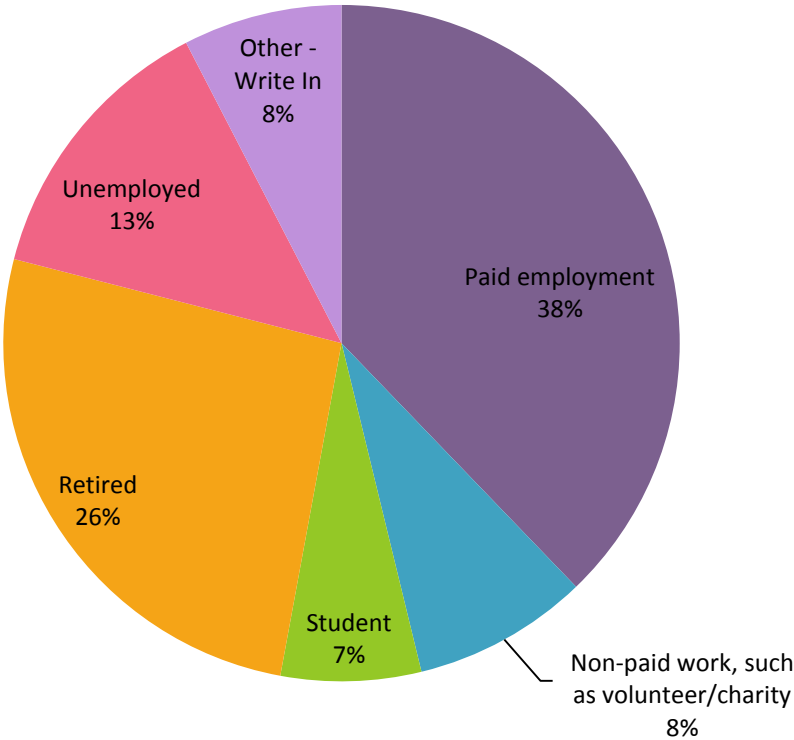
Value	Percent	Count
18-30	16.8%	20
31-45	27.7%	33
Over 45	55.5%	66
	Total	119

Highest level of education completed: (Select single best option)



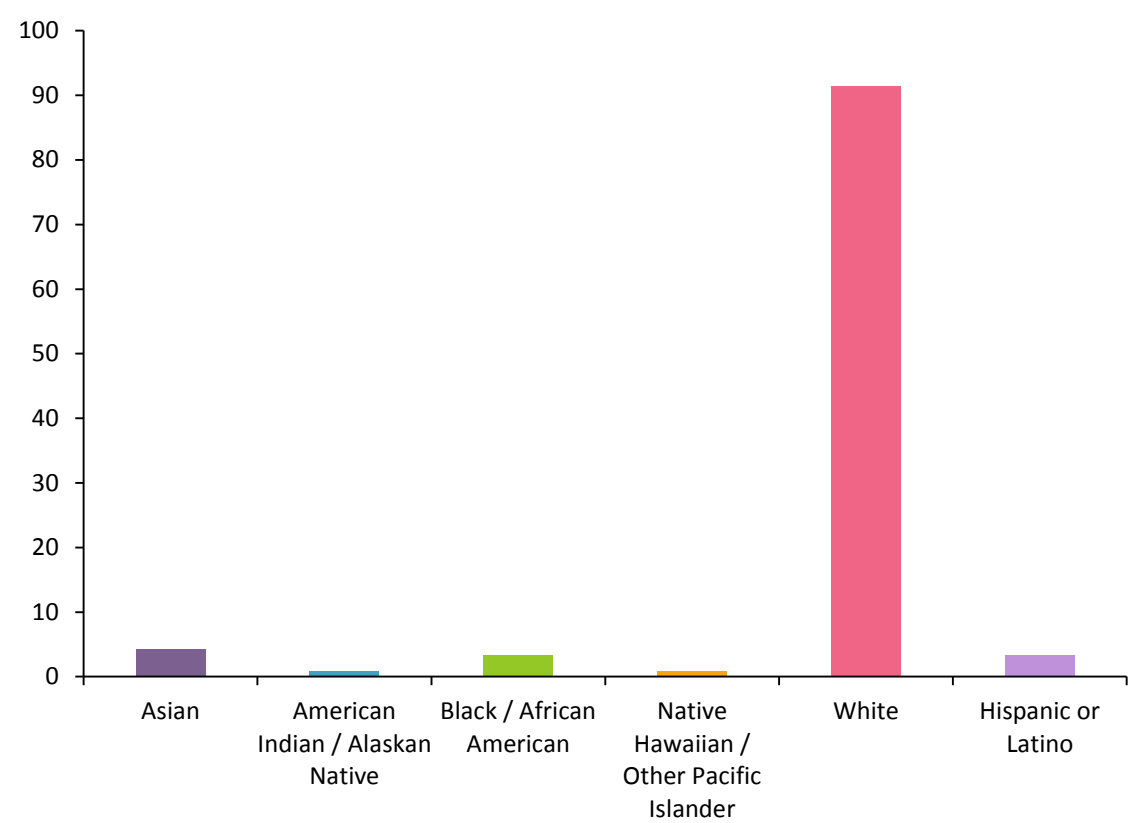
Value	Percent	Count
Some or no high school	1.7%	2
High school diploma or GED	23.3%	28
College degree	45.0%	54
Graduate degree	30.0%	36
	Total	120

Current occupation (select single best option)



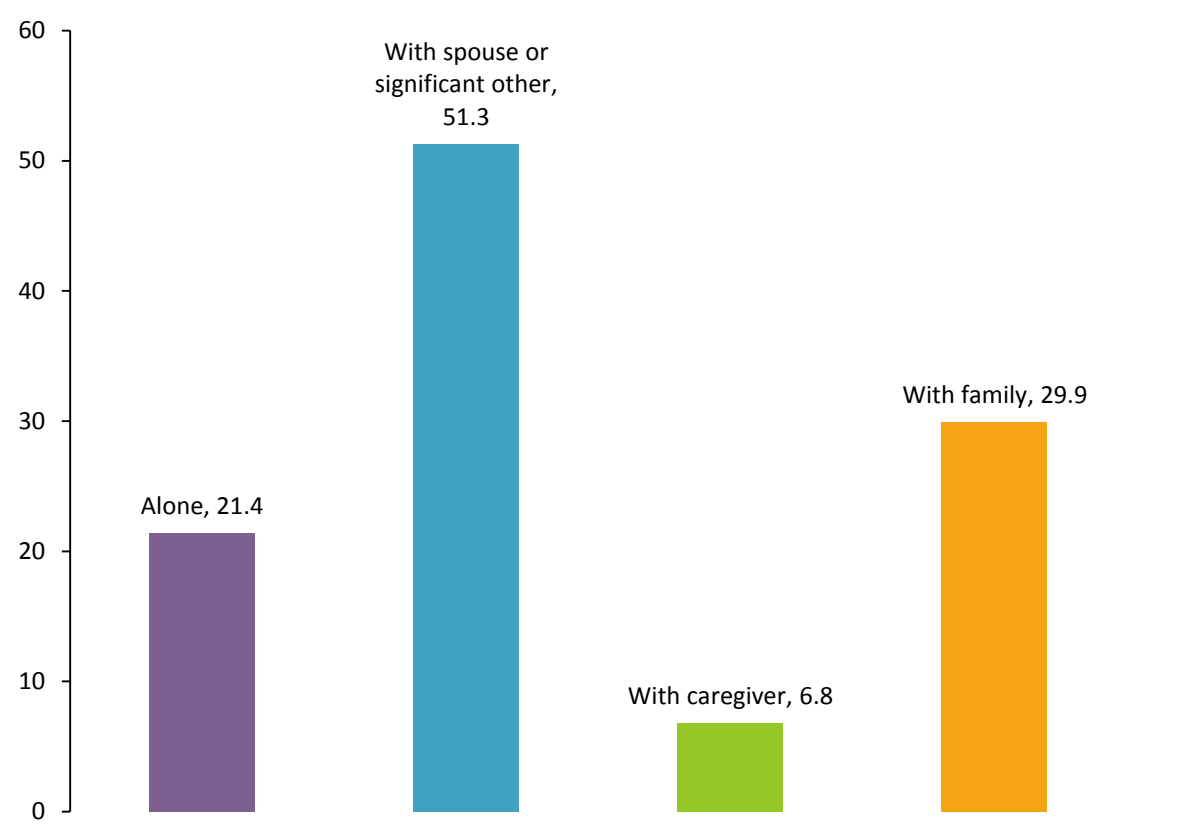
Value	Percent	Count
Paid employment	37.8%	45
Non-paid work, (volunteer/charity or Home Maker	8.4%	10
Student	6.7%	8
Retired	26.1%	31
Unemployed	13.4%	16
Other - Write In	7.6%	9
	Total	119

Race or ethnicity (you may select more than one option)



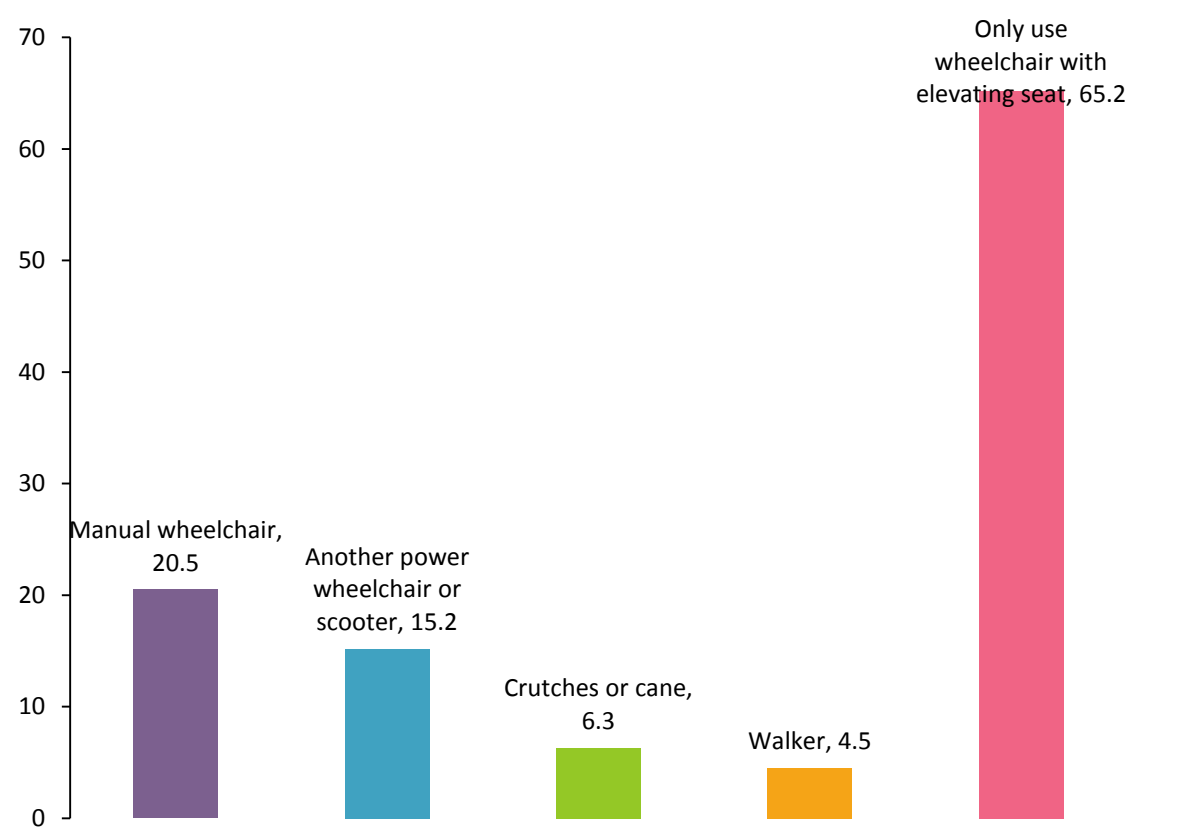
Value	Percent	Count
Asian	4.3%	5
American Indian / Alaskan Native	0.9%	1
Black / African American	3.4%	4
Native Hawaiian / Other Pacific Islander	0.9%	1
White	91.4%	106
Hispanic or Latino	3.4%	4

Living situation (you may select more than one response)



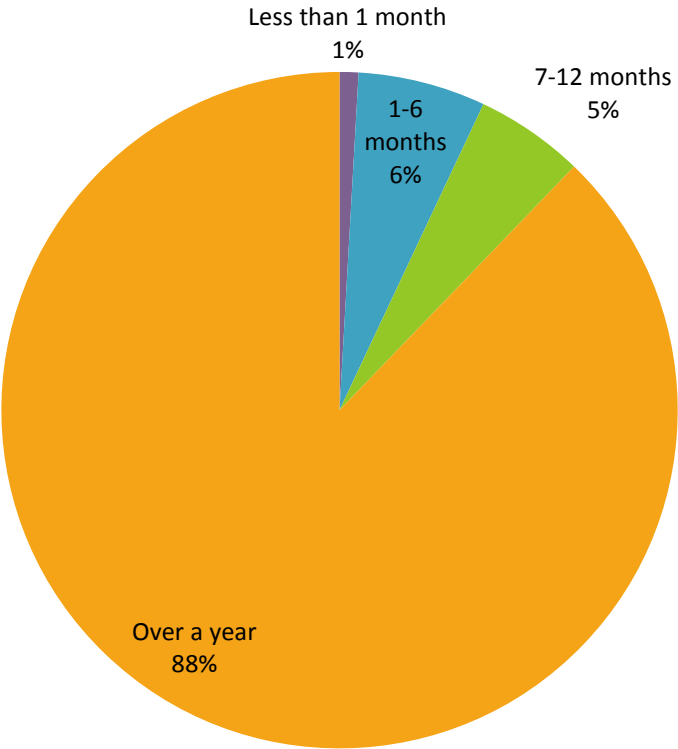
Value	Percent	Count
Alone	21.4%	25
With spouse or significant other	51.3%	60
With caregiver	6.8%	8
With family	29.9%	35

What other mobility devices do you regularly use? (you may select more than one response)



Value	Percent	Count
Manual wheelchair	20.5%	23
Another power wheelchair or scooter	15.2%	17
Crutches or cane	6.3%	7
Walker	4.5%	5
I only use the wheelchair with the seat elevator	65.2%	73

How long have you used a power wheelchair?

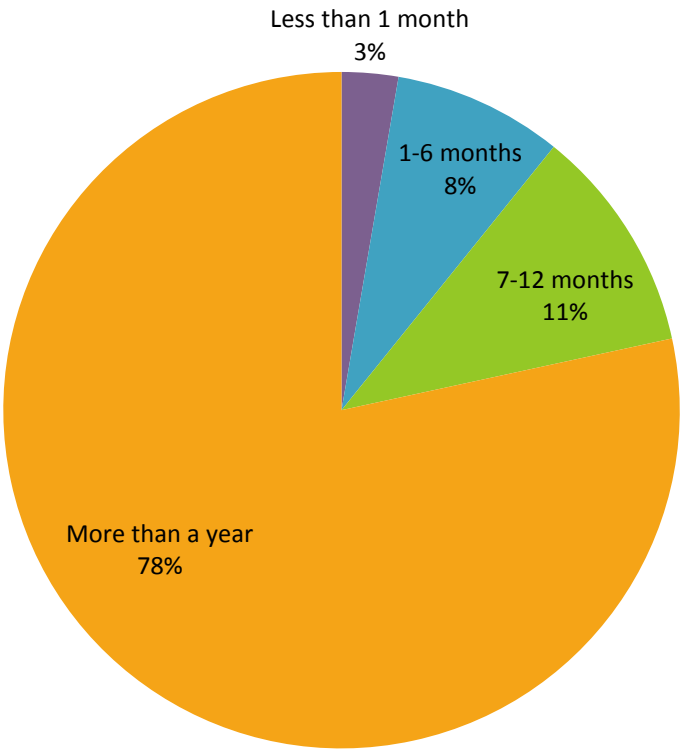


Value	Percent	Count
Less than 1 month	0.9%	1
1-6 months	6.1%	7
7-12 months	5.2%	6
Over a year	87.8%	101
	Total	115

Collapsed results

	Percent	Count
Less than one year	12.2	14
More than one year	87.8	101
	Total	115

How long have you had a chair with a seat elevator?

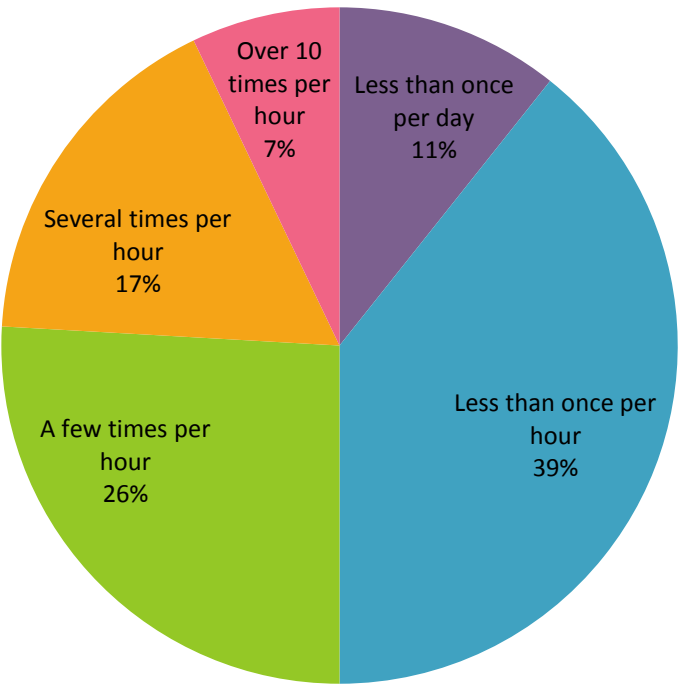


Value	Percent	Count
Less than 1 month	2.7%	3
1-6 months	8.1%	9
7-12 months	10.8%	12
More than a year	78.4%	87
	Total	111

Collapsed results

	Percent	Count
Less than one year	21.6	24
More than one year	78.4	87
	Total	111

Approximately how often do you engage the seat elevating feature to raise or lower the seat?



Value	Percent	Count
Less than once per day	10.7%	12
Less than once per hour	39.3%	44
A few times per hour	25.9%	29
Several times per hour	17.0%	19
Over 10 times per hour	7.1%	8
	Total	112

Frequency of using seat elevation across gender, age and employment status

(Chi-square not significant- no differences in frequencies across categories)

	Female	Male	All
<1 per hour	31	25	56
Few/several per hr	22	26	48
>10 per hour	4	3	7
All	57	54	111

	Not working	Working/Student	All
<1 per hour	23	33	56
Few/several per hr	24	24	48
>10 per hour	5	2	7
All	52	59	111

	Age			
	18-30	31-45	45+	All
<1 per hour	12	16	28	56
Few/several per hr	7	14	27	48
>10 per hour	1	0	5	6
All	20	30	60	110

Please estimate the relative frequency of using seat elevation in the locations listed.

	Often	#	Sometimes	#	Rarely	#	Never	#
At Home	78.9%	86	14.7%	16	4.6%	5	1.8%	2
At work or school	45.3%	43	23.2%	22	10.5%	10	21.1%	20
In the community	56.5%	61	37%	40	5.6%	6	0.9%	1
Outdoors	38.5%	42	32.1%	35	24.8%	27	4.6%	5

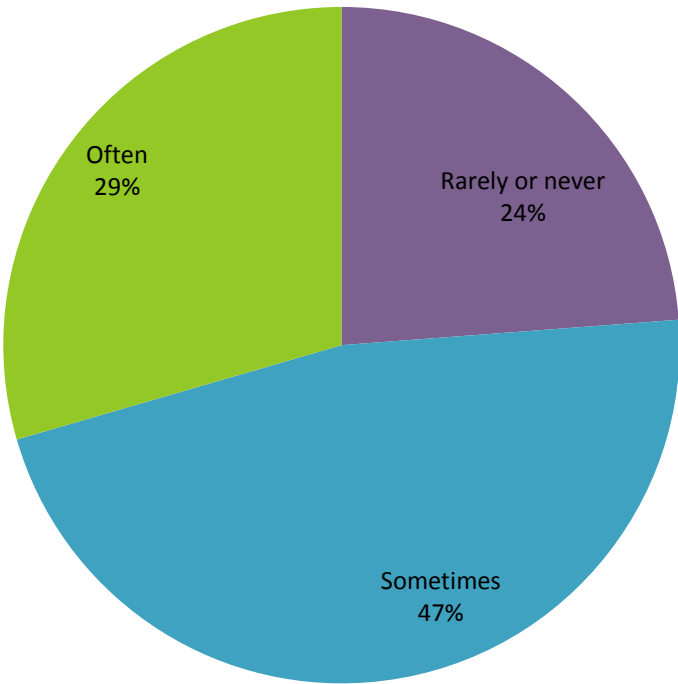
Collapsed responses

	Often/Sometimes	#	Rarely/Never	#
At Home	93.6%	102	6.4%	7
At work or school	68.4%	65	31.6%	30
In the community	93.5%	101	6.5%	7
Outdoors	70.6%	77	29.4%	32

For each of the activities listed below, estimate how often you use the seat elevating feature

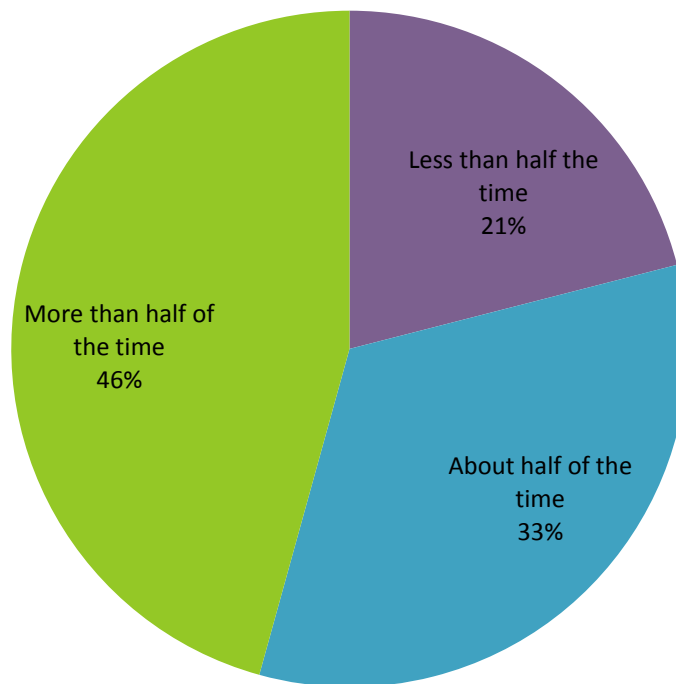
	Often	#	Sometimes	#	Rarely	#	Never	#
During transfers to or from the wheelchair	63.8%	67	16.2%	17	7.6%	8	12.4%	13
To help reach things	81.9%	86	13.3%	14	3.8%	4	1%	1
Improve gaze or line of sight	55.2%	58	29.5%	31	11.4%	12	3.8%	4
While dressing	16.3%	17	26%	27	17.3%	18	40.4%	42
While grooming (brushing teeth, combing hair, etc)	39.4%	41	23.1%	24	16.3%	17	21.2%	22
While eating or preparing a meal	59.2%	61	24.3%	25	6.8%	7	9.7%	10
During toileting activities	27.2%	28	17.5%	18	22.3%	23	33%	34
During bathing activities	21%	22	10.5%	11	17.1%	18	51.4%	54

Do you drive your wheelchair with the seat elevated, even if it is elevated slightly?



Value	Percent	Count
Rarely or never	23.8%	25
Sometimes	46.7%	49
Often	29.5%	31
	Total	105

When using the seat elevator, how often do you raise the seat to its highest possible position?



Value	Percent	Count
Less than half the time	21.0%	22
About half of the time	33.3%	35
More than half of the time	45.7%	48
	Total	105

Wheelchair seat elevators

(untitled)

You are being asked to participate in a research study. This anonymous survey is being administered by the Rehabilitation Engineering and Applied Research Lab at Georgia Tech. We are interested in learning about how people use wheelchair seat elevating features. If you use a wheelchair equipped with a seat elevator, we invite you to participate. The survey includes 18 questions and should take less than 5 minutes to complete.

We will ask you basic personal information but will not ask your name or other information that can identify you. Survey results will be tabulated and individual responses will not be made available to persons outside of the research project. You will not benefit directly from taking this survey, but survey responses may be used to help design better seat elevators or to study their use. Your participation is completely voluntary. You do not have to participate if you do not want to. By submitting the survey, it means that you have read this information, and would like to be a volunteer in this research study.

At the end of the survey, you will be asked if you would like to receive the tabulated survey results or be considered for future research. If so, you will have the option to provide an e-mail address so you may be sent information. As a result, you will have consented to providing this information. We will not share your email address with anyone. If you have any questions about the survey, you may contact Dr. Stephen Sprigle at sprigle@gatech.edu. If you have any questions about your rights as a research subject, you may contact Ms. Melanie Clark, Georgia Institute of Technology at (404) 894-6942.)

Thank you.

(untitled)

1. Do you currently use a power wheelchair with a seat elevating feature on a regular basis? *

- ☐ Yes
- ☐ No

(untitled)

2. Who is the manufacturer of your seat elevator

- ☐ Amy Systems
- ☐ Invacare
- ☐ Motion Concepts
- ☐ Permobil
- ☐ Pride Jazzy
- ☐ Pride/Quantum
- ☐ Sunrise Medical
- ☐ Other - Write In

(untitled)

3. What is your gender?

- ☐ Female
- ☐ Male

4. What is your age?

- ☐ 18-30
- ☐ 31-45
- ☐ Over 45

(untitled)

5. Highest level of education completed: (Select single best option)

- ☐ Some or no high school
- ☐ High school diploma or GED
- ☐ College degree
- ☐ Graduate degree

6. Current occupation (select single best option)

- ☐ Paid employment
- ☐ Non-paid work, such as volunteer/charity or Home Maker
- ☐ Student
- ☐ Retired
- ☐ Unemployed
- ☐ Other - Write In

(untitled)

7. Race or ethnicity (you may select more than one option)

- ☐ Asian
- ☐ American Indian / Alaskan Native
- ☐ Black / African American
- ☐ Native Hawaiian / Other Pacific Islander
- ☐ White
- ☐ Hispanic or Latino

8. Living situation (you may select more than one response)

- ☐ Alone
- ☐ With spouse or significant other
- ☐ With caregiver
- ☐ With family

(untitled)

9. What other mobility devices do you regularly use? (you may select more than one response)

- ☐ Manual wheelchair
- ☐ Another power wheelchair or scooter
- ☐ Crutches or cane
- ☐ Walker
- ☐ I only use the wheelchair with the seat elevator

10. How long have you used a power wheelchair

- ☐ Less than 1 month
- ☐ 1-6 months
- ☐ 7-12 months
- ☐ Over a year

(untitled)

11. How long have you had a chair with a seat elevator?

- ☐ Less than 1 month
- ☐ 1-6 months
- ☐ 7-12 months
- ☐ More than a year

12. Approximately how often do you engage the seat elevating feature to raise or lower the seat?

- ☐ Less than once per day
- ☐ Less than once per hour
- ☐ A few times per hour
- ☐ Several times per hour
- ☐ Over 10 times per hour

(untitled)

13. Please estimate the relative frequency of using seat elevation in the locations listed.

	Often	Sometimes	Rarely	Never
At Home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At work or school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Outdoors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

(untitled)

14. For each of the activities listed below, estimate how often you use the seat elevating feature

	Often	Sometimes	Rarely	Never
During transfers to or from the wheelchair	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To help reach things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improve gaze or line of sight	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
While dressing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
While grooming (brushing teeth, combing hair, etc)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
While eating or preparing a meal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
During toileting activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
During bathing activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="text" value="Enter another option"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

(untitled)

15. Do you drive your wheelchair with the seat elevated, even if it is elevated slightly?

- ☐ Rarely or never
- ☐ Sometimes
- ☐ Often

16. When using the seat elevator, how often do you raise the seat to its highest possible position?

- ☐ Less than half the time
- ☐ About half of the time
- ☐ More than half of the time

(untitled)

17. Thank you for participating in this survey. We would be happy to send you the tabulated results. If you would like the results sent to you, please enter an email address. We will not share this address with anyone. Please note that you are not required to provide this information.

email address

18. If you would like to be contacted about other research projects on seat elevators, please enter your zip code and email address. We will not share this information with anyone. Please note that you are not required to provide this information.

Zip code

Email address

Thank You!

Thank you for taking our survey. Your response is very important to us.